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National Energy Board

Reasons for Decision

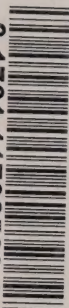
Westcoast Energy Inc.

GH-2-92

April 1992

Facilities

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National Energy Board

Reasons for Decision

Westcoast Energy Inc.

Application Dated 20 November
1991 for the Tommy Lakes
Pipeline Project

GH-2-92

April 1992



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Recital and Appearances

IN THE MATTER OF the *National Energy Board Act* ("the Act") and the regulations made thereunder;

AND IN THE MATTER OF an application dated 20 November 1991 by Westcoast Energy Inc. for a certificate of Public Convenience and Necessity, pursuant to Part III of the Act, for the Tommy Lakes Pipeline Project;

AND IN THE MATTER of an application for an Order, pursuant to Part IV of the Act, approving a toll surcharge for raw gas transmission service through the proposed facilities;

AND IN THE MATTER of the National Energy Board Hearing Order GH-2-92 and Amending Order A0-1-GH-2-92.

HEARD at Fort St. John, British Columbia on 24 March 1992.

BEFORE:

R. Illing	Presiding Member
A.B. Gilmour	Member
A. Côté-Verhaaf	Member

APPEARANCES:

R. Sirett	Westcoast Energy Inc.
C. Apsassin	Blueberry River Indian Band/Treaty and Tribal Association
B.A. Woods	Mobil Oil Canada
P.J. McIntyre	Canadian Hydrocarbons Marketing Inc., Numac Oil and Gas Ltd., and Westcoast Petroleum Ltd.
J. Clark	Department of Fisheries and Oceans
P. Noonan	Board Counsel

Abbreviations

Act	National Energy Board Act
Band	Blueberry River Indian Band
Bcf	billion cubic feet
B.C.	British Columbia
BC Gas	BC Gas Inc.
Board	National Energy Board
Centra	Centra Gas Inc.
CHMI	Canadian Hydrocarbons Marketing Inc.
DFO	Department of Fisheries and Oceans
EARP Guidelines Order	Environmental Assessment and Review Process Guidelines Order
EIL	Environmental Issues List
ha	hectare
HIPCO	Huntingdon International Pipeline Corporation
IPAC	Independent Petroleum Association of Canada
Kern River	Kern River Gas Transmission
km	kilometre
kPa	kilopascals
LDC	local distribution company
m	metre
m ³	cubic metre
Mcf	thousand cubic feet
mm	millimetre
m ³ /d	cubic metre per day
MMcfd	million cubic feet per day
Mobil	Mobil Oil Canada

MEMPR	B.C. Ministry of Energy, Mines and Petroleum Resources
MOELP	B.C. Ministry of Environment, Lands and Parks
MOF	B.C. Ministry of Forests
NEB	National Energy Board
Numac	Numac Oil & Gas Ltd.
O.D.	outside diameter
Onshore Regulations	National Energy Board Onshore Pipeline Regulations
PCEC	Pacific Coast Energy Corporation
PNG	Pacific Northern Gas Ltd.
psi	Pounds per square inch
RGT Policy	Westcoast's Raw Gas Transmission Facility Expansion Policy
Surcharge	Toll Surcharge
Texaco	Texaco Canada Petroleum Inc.
U.S.	United States of America
Washington Natural	Washington Natural Gas Company
Westcoast	Westcoast Energy Inc.
WPL	Westcoast Petroleum Limited

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1.1 The Application

On 20 November 1991, Westcoast Energy Inc. ("Westcoast") filed an application with the National Energy Board ("the Board" or "NEB") for a Certificate of Public Convenience and Necessity pursuant to Part III of the *National Energy Board Act* ("the Act") authorizing the construction of additional pipeline facilities to be added to its existing Fort St. John raw gas transmission system. In conjunction with this application, Westcoast applied, pursuant to Part IV of the Act, for an order approving a monthly surcharge for the provision of raw gas transmission service through the proposed facilities.

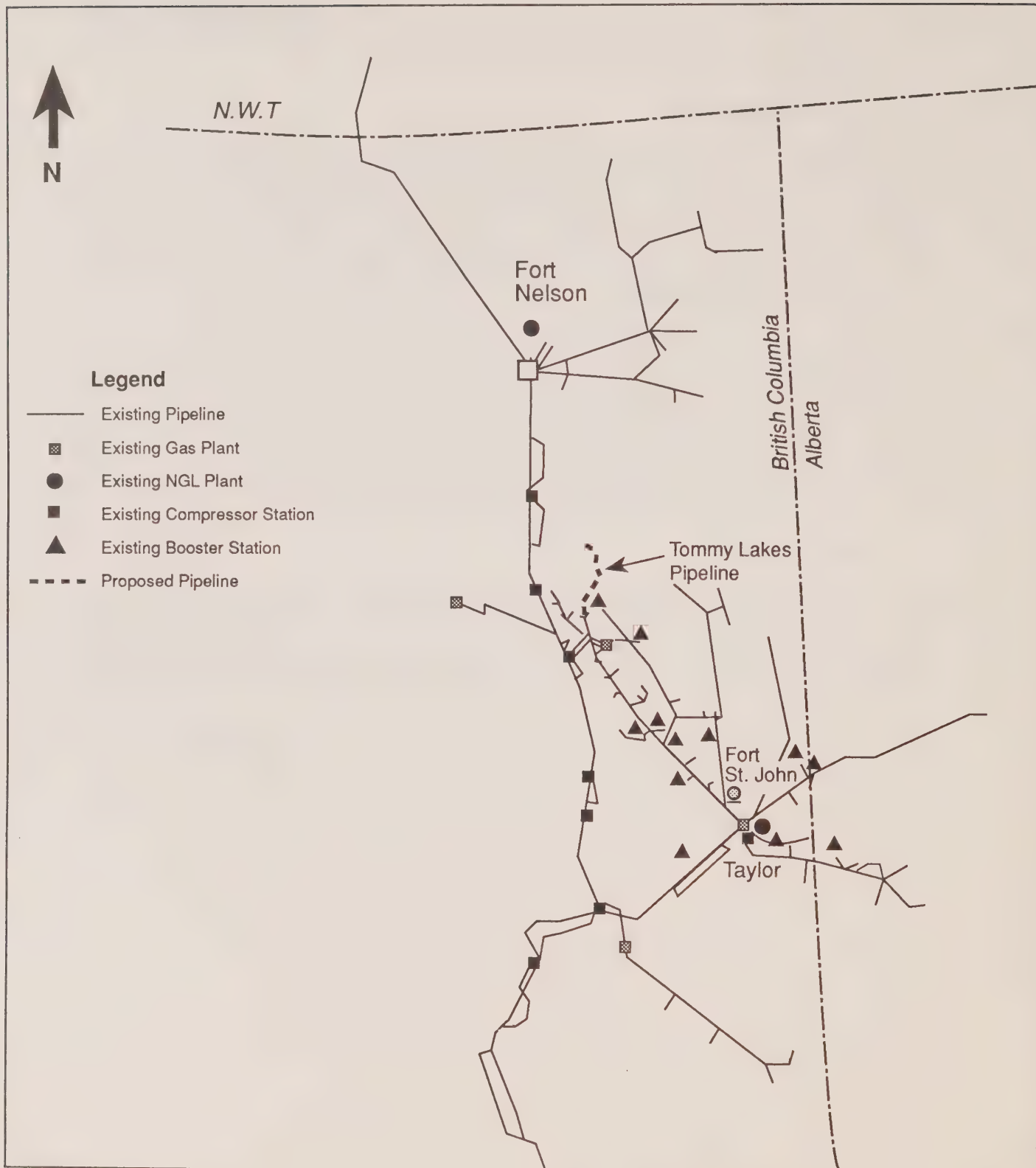
The facilities, known as the Tommy Lakes Pipeline, would consist of approximately 61.5 km of 273.1 mm outside diameter ("O.D.") pipe, and would transport gas from the eastern segment of the Tommy Lakes field in north-eastern British Columbia ("B.C.") to Westcoast's 323.9 mm O.D. Jedney Pipeline (Figure 1-1), for ultimate delivery to the McMahon Plant at Taylor B.C. The facilities would initially be used to provide raw gas transmission service to Westcoast Petroleum Limited ("WPL") from 1 November 1992 to 31 October 2002. In its application, Westcoast also reported that Numac Oil and Gas Limited ("Numac") had entered into a gas sales agreement to supply natural gas from reserves developed in the Tommy Lakes area.

1.2 The Hearing

On 7 February 1992, the Board issued Order GH-2-92 setting down Westcoast's application for hearing commencing 24 March 1992 in Fort St. John, B.C. On 11 February 1992 the Board amended the Hearing Order in order to revise the filing schedule set out in the Directions on Procedure. Hearing Order AO-1-GH-2-92 was issued to extend the deadline for interventions by interested parties.

In compliance with the *Environmental Assessment and Review Process Guidelines Order* (the "EARP Guidelines Order"), the Board also conducted an environmental screening of Westcoast's application.

Figure 1-1
Westcoast Energy Inc.
Location of the Applied-for Facilities



2.1 Reserves

The gas supply for the proposed pipeline will be provided by WPL and Numac from their combined 76 percent working interest in the Tommy Lakes Halfway A pool. Both Numac and WPL have also signed a 15-year reserves dedication agreement with Amoco Canada Resources Limited ("Amoco") for its 24 percent working interest share in the Tommy Lakes Halfway A gas pool.

<p style="text-align: center;">Table 2-1 Comparison of Estimates of Established Raw Gas Reserves ⁽¹⁾ with the Firm Service Volume ⁽²⁾ 10⁶m³ (Bcf)</p>			
	<u>Westcoast</u> ⁽³⁾	<u>NEB</u>	<u>Firm Service Volume</u>
East Core Area	2 515 (89)	2 439 (86)	
West Core Area	1 473 (52)	1 465 (52)	
Remaining Lands	<u>5 519 (195)</u>	<u>2 597 (92)</u>	
Total	9 507 (336)	6 501 (230)	1 774 (63)

Westcoast provided its estimates of raw gas reserves available from the Halfway A pool in support of the applied-for pipeline. The Board's estimates of established raw gas reserves are compared with Westcoast's estimates and firm service volume in Table 2-1.

Westcoast split the Halfway A pool into east and west portions using the Sikanni Chief River to divide the pool. Westcoast identified specific core areas within each portion of the pool as shown in Figure 2-1. Westcoast then assigned estimates of established raw gas reserves to both the core areas and the remaining lands based on hydrocarbon pore volume maps.

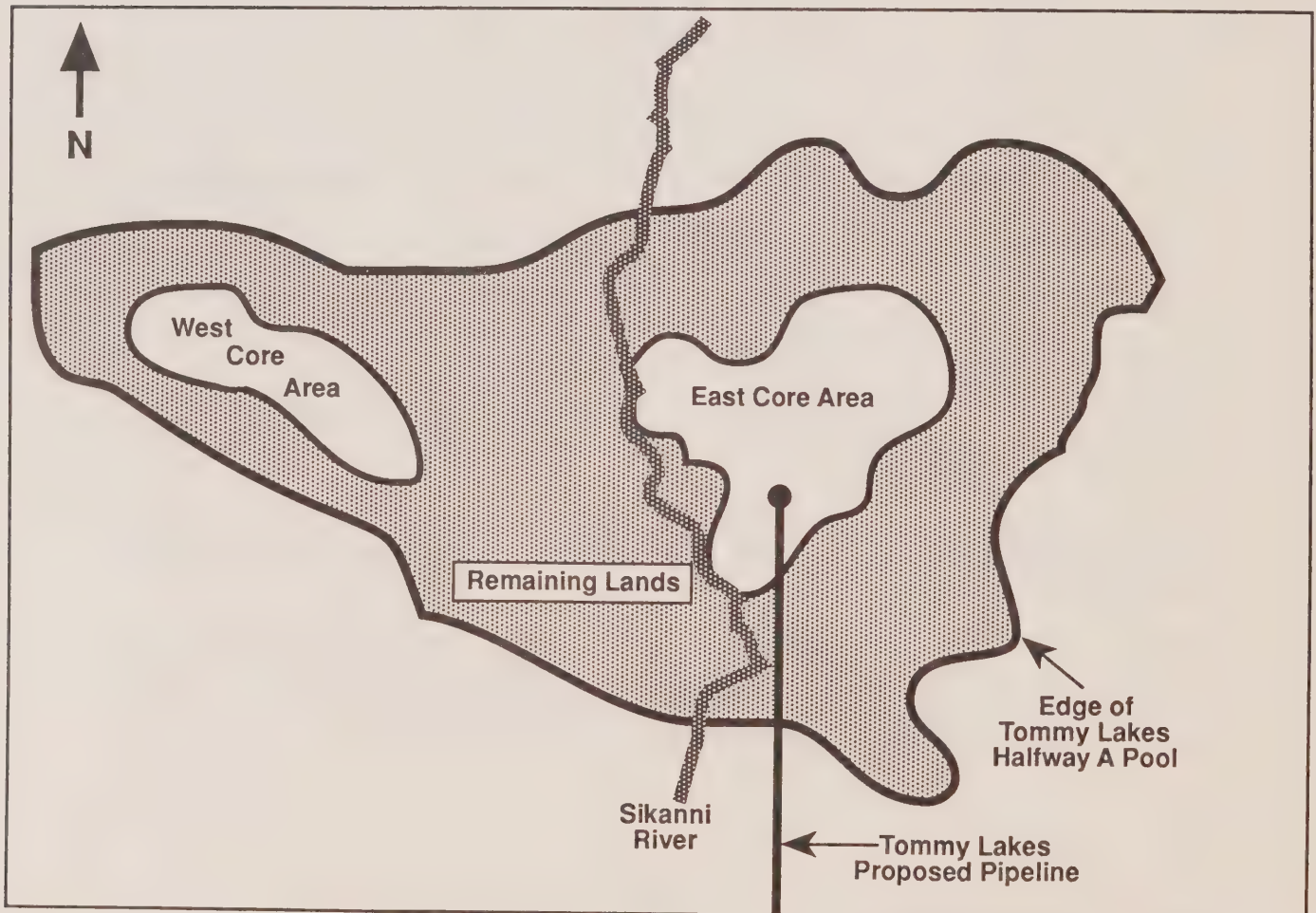
(1) As of 1 January 1992

(2) Total volume assuming 486.1 10³m³/d (17MMcfd) for ten years at a 100 percent load factor. This volume will be provided from the core areas.

(3) Estimates are equivalent to the Board's established reserves category.

In its analysis of gas supply, the Board evaluated the east and west core areas and remaining lands in a manner similar to that followed by Westcoast. However, the Board's estimate of established raw gas reserves is considerably lower than the Applicant's due to the assumed lower recovery factors for both the core areas and the remaining lands. The Board's recovery factor for the remaining lands is lower than that for the core areas due to anticipated water production problems and limited well development. The Board is not persuaded by Westcoast's recovery factor evidence in support of its higher estimates of established raw gas reserves at this time. However, the Board acknowledges that with additional development in the remaining lands, its estimate of recovery factor, and therefore reserves, may be conservative.

Figure 2-1
Schematic Reproduction of Core Development Areas in Tommy Lakes
Halfway A Pool



2.2 Productive Capacity

Westcoast provided a projection of raw gas productive capacity from the Tommy Lakes Halfway A pool to demonstrate the adequacy of supply to support the firm service contract volumes. The estimate was based upon expected productive capacity from the 16 existing wells, as well as 35 proposed wells in the east and west core areas.

Westcoast's projection of productive capacity showed that the core areas were capable of meeting the firm service contract of $486 \times 10^3 \text{ m}^3/\text{d}$ (17 MMcfd) for a period of 20 years, beginning in 1993. Westcoast indicated that deliverability from wells in the east area could satisfy the firm service contract level for 10 years prior to declining. In subsequent years, deliverability from wells in the east area would be supplemented by gas produced from the west area in order to fully satisfy the firm service contract.

The Board examined two scenarios of productive capacity from the Tommy Lakes Field. First, the Board assessed the adequacy of daily productive capacity from the core areas alone to meet the current firm service contract rate. Second, the Board assessed productive capacity from the entire pool to meet the overall pipeline capacity. The first scenario considered only those wells required in the core areas to maintain productive capacity at the firm service contract rate whereas the second scenario assumed that the entire pool would be fully developed and that productive capacity would not be limited by contract rate.

Figure 2-2 shows that productive capacity from the two core areas alone would be sufficient to meet the firm contract rate for about 14 years although the term of the firm service contract is ten years. This is somewhat shorter than Westcoast's estimate due in part to the Board's projection of a more rapid decline in deliverability from the east area. The Board expects that supplemental productive capacity from the west core area will be needed to meet contract requirements as early as five years from start-up. Potential shortfalls in productive capacity could be mitigated by more rapid development of the west core area and by development of those lands outside both the east and west core areas.

The Board's projection of productive capacity from the entire Tommy Lakes Halfway A pool is compared with total pipeline capacity in Figure 2-3. In this case, productive capacity was adjusted to reflect annual volumes limited by overall pipeline capacity. The shortage indicated early in the projection period could be mitigated by earlier development of the west area. In order to alleviate the larger shortfall in productive capacity, expected to commence midway through the projection period, gas supply from other zones or areas adjacent to the Tommy Lakes Field would have to be added.

2.3 Views of the Board

The Board is satisfied that adequate reserves and productive capacity are available to support the current firm service contract level of the pipeline. The Board recognizes that there is upside potential to its estimates of reserves in the Tommy Lakes area and that completion of the pipeline should stimulate further exploration and development activity in surrounding areas. For these reasons, the Board believes that there will be sufficient reserves and productive capacity in the Tommy Lakes area to support the total capacity of the proposed pipeline.

Figure 2-2
Comparison of NEB'S Estimate of Daily Productive Capacity
of Total Tommy Lakes Field with Total Pipeline Capacity

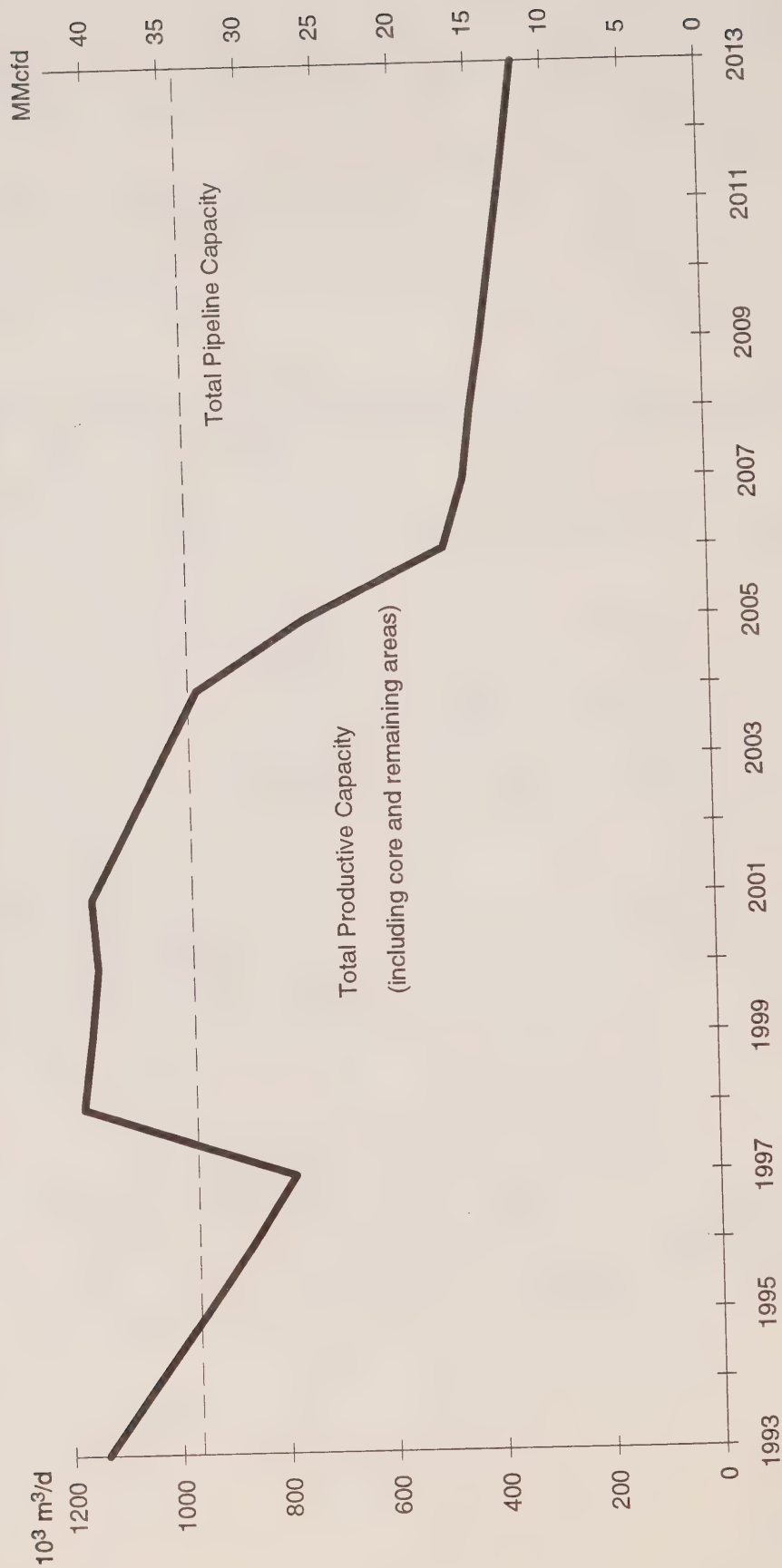
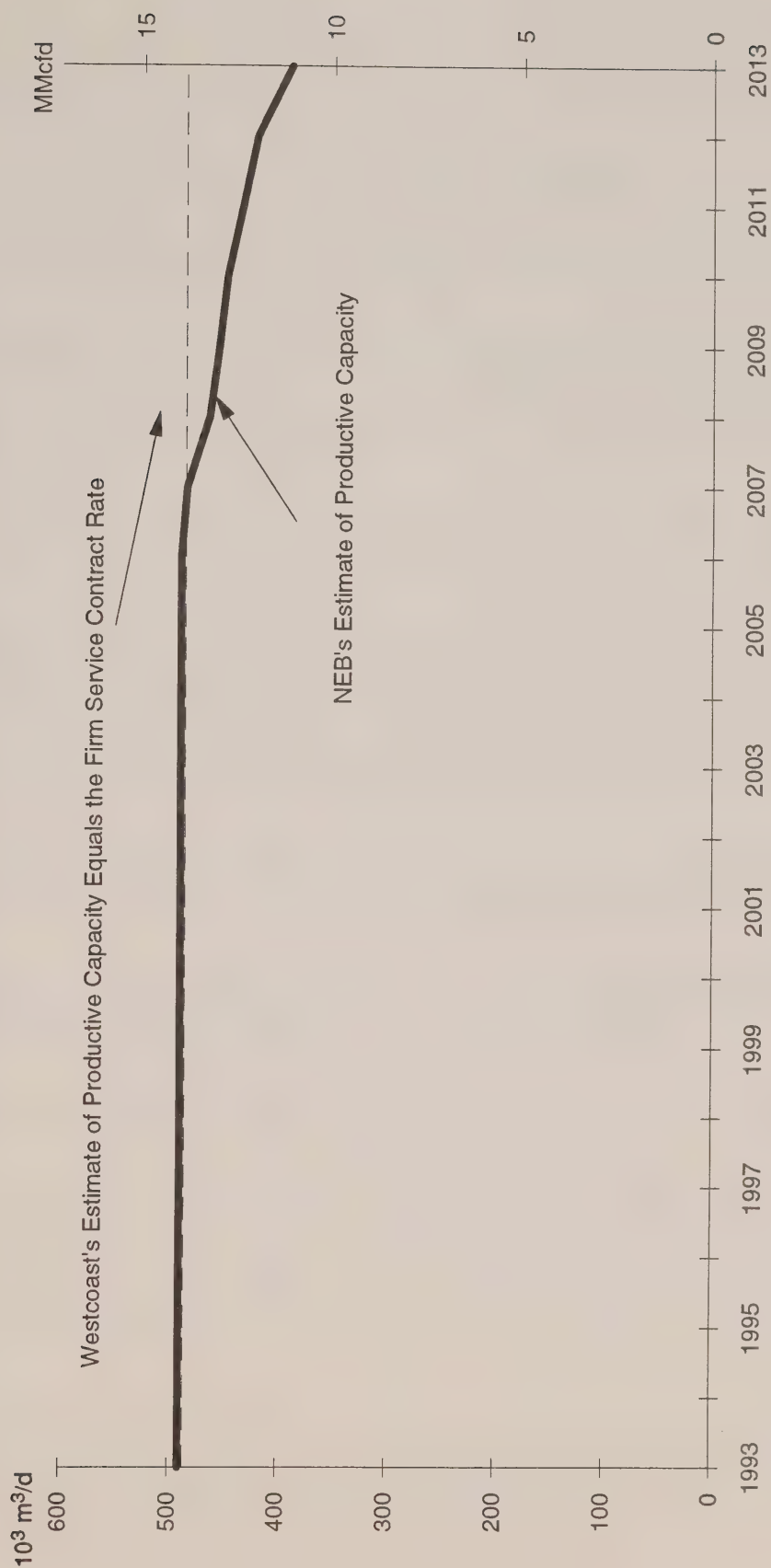


Figure 2-3
Comparison of NEB'S Estimate of Daily Productive Capacity
from the Core Areas with Firm Service Contract Rate



3.1 Service Agreements and Project Specific Markets

In support of its facilities application, Westcoast has executed a firm service agreement with WPL, dated 21 October 1991, for firm raw gas transmission service on the applied-for facilities and firm treatment service at the Westcoast McMahon Plant.

The agreement provides for 486.1 $10^3\text{m}^3/\text{d}$ (17.2 MMcfd) of raw gas transmission service from the Tommy Lakes Field in northeastern B.C. to the McMahon Plant for the period 1 November 1992 to 31 October 2002. The agreement also provides for 434.0 $10^3\text{m}^3/\text{d}$ (15.3 MMcfd) of treatment service commencing with the start of the raw gas transmission service and ending on 31 October 2002.

The Agreement is conditional upon Westcoast obtaining, before 31 July 1992, NEB approval for the construction and operation of the Tommy Lakes pipeline, and for NEB orders approving the toll surcharge.

WPL and Numac have executed a long-term gas supply contract to supply gas to Canadian Hydrocarbons Marketing Inc. ("CHMI") for the period 1 November 1992 to 31 October 2002. In turn, CHMI has executed a long-term gas sales contract with Washington Natural Gas Company ("Washington Natural") for the sale of 273.9 $10^3\text{m}^3/\text{d}$ (9.7 MMcfd) during the period 1 November 1992 to 31 October 2002. CHMI is a subsidiary of Centra Gas Inc. ("Centra"), which is in turn a subsidiary of Westcoast. CHMI is a gas marketer serving Alberta, B.C., and Pacific Northwest markets.

By application dated 31 October 1991, CHMI applied to the Board for a ten-year export licence to export 273.9 $10^3\text{m}^3/\text{d}$ (9.7 MMcfd) at Huntingdon, B.C.. That application is to be heard in the GH-1-92 proceedings.

Washington Natural is a U.S. local distribution company ("LDC") serving residential, commercial and industrial customers in northwest Washington, including the cities of Seattle and Tacoma. Washington Natural intends to use this Canadian-sourced gas for its system supply.

Washington Natural's U.S. import approval application was filed in October 1991 with the United States of America Department of Energy/Office of Fossil Energy.

CHMI has executed long-term transportation service agreements with Westcoast for the delivery of 339.8 $10^3\text{m}^3/\text{d}$ (12.0 MMcfd) from Westcoast's McMahon gas processing plant at Taylor, B.C. to Compressor Station No. 2 and for the delivery of 283.3 $10^3\text{m}^3/\text{d}$ (10.0 MMcfd) from Compressor Station No. 2 to the Huntingdon, B.C. export point. Downstream, Washington Natural has an existing transportation service agreement with Northwest for the delivery of the CHMI imports from the Huntingdon, B.C. export point to the point(s) of interconnection with its distribution system.

In addition to the export sale to Washington Natural, WPL and Numac intend to use the Tommy Lakes reserves and production to serve other export and domestic markets. WPL indicated that the only domestic sale currently contemplated is to Westcoast Power Inc. and CU Power jointly. WPL noted that it has executed a twenty-year gas sales contract with Westcoast Power Inc. and

CU Power to supply 175.0 $10^3\text{m}^3/\text{d}$ (6.2 MMcfd) of gas, commencing 1 October 1993, to fuel a cogeneration plant to be built at Taylor, B.C.

3.2 Overall Market Requirements

Westcoast provided a forecast of deliveries to domestic and export markets off the Westcoast system for a ten-year period commencing 1 January 1992 and ending 31 December 2001 (refer to Table 3-1), which indicated that:

- (a) domestic deliveries are forecast to increase from 6 714.0 10^6m^3 (237 Bcf) to 8 612.0 10^6m^3 (304 Bcf) per year;
- (b) export deliveries are forecast to increase from 7 278.0 10^6m^3 (257 Bcf) to 10 113.0 10^6m^3 (357 Bcf) per year; and,
- (c) domestic and export deliveries will increase from 13 992.0 10^6m^3 (494 Bcf) to 18 725.0 10^6m^3 (661 Bcf) per year, an increment of 3.2 percent per year on an average annual basis.

Westcoast noted that it continually monitors its performance and annually prepares updated forecasts based upon the most current data and upon its ongoing dialogue with its domestic and export shippers, Northwest and U.S. LDCs.

Westcoast noted that its market forecast does not reflect BC Gas Inc.'s ("BC Gas") intention to import US-sourced gas into its franchise area via the proposed Huntingdon International Pipeline Corporation ("HIPCO") pipeline facilities. Westcoast explained that the HIPCO project will have no impact on its overall domestic and export market forecast "... since U.S.-sourced gas purchased by BC Gas will, in the absence of the HIPCO project, presumably be imported by BC Gas by way of a backhaul transportation on Westcoast's system."

Westcoast submitted that its overall domestic market forecast took account of the following:

- (a) historical data on gas markets;
- (b) a review of available domestic demand forecasts;
- (c) annual forecast volumes provided by and reviewed with BC Gas, Pacific Northern Gas Ltd. ("PNG"), and Pacific Coast Energy Corporation ("PCEC"); and
- (d) Westcoast's discussions with several major industrial gas customers.

Westcoast noted that the PCEC pipeline commenced deliveries to new core and industrial market customers on Vancouver Island and the Sunshine Coast in the Fall of 1991. Westcoast's Vancouver Island forecast (i.e., PCEC) assumes early conversion of large industrial loads (i.e., pulp and paper mills) to gas from heavy fuel oil and core market penetration as the LDC, Centra, expands its system to provide service to residential, commercial and small industrial customers. Some of these customers are currently served by propane-air distribution systems in Victoria and Nanaimo. A joint venture representing those large industrial customers has executed a long-term service agreement with PCEC.

Westcoast noted that its domestic electric generation demand forecast for the Burrard Thermal Station is based upon discussions with the B.C. Power Exchange Corporation. Demand is forecast to be 390.0 10^6m^3 (13.7 Bcf) per year. In addition to the Burrard facility, Westcoast identified two new cogeneration facilities which were planned to come into service over the

forecast period. The first facility, to be constructed adjacent to Westcoast's McMahon Gas Processing Plant, is to be in service by 1994. The second, to be located at Westcoast's Fort Nelson Plant, is to be in service by 1996. Westcoast noted that there is potential for additional gas-fired cogeneration development but that that potential had not been reflected in its long-term forecast.

Westcoast submitted that its overall export market forecast was based upon the following:

- (a) a review of Northwest's market demand forecast and actual gas deliveries into the Pacific Northwest;
- (b) an analysis of general trends in Westcoast deliveries at the Huntingdon, B.C. export point;
- (c) an analysis of the "Least Cost Plans" of the U.S. LDCs as submitted to their respective state regulatory commissions; and,
- (d) ongoing discussions with Northwest and the U.S. LDCs connected to the Northwest system.

Westcoast indicated that approximately 50 percent of the gas flowing on its system is delivered to downstream pipeline systems for use outside B.C. Westcoast noted that, while gas entering Alberta through its Gordondale line has traditionally flowed to the northern California market, other export markets (i.e., the midwestern and eastern U.S.) and eastern Canadian domestic markets are also expected to be served in the near future. In addition, Westcoast noted the recent establishment of an additional export point near Huntingdon, B.C. associated with the construction of the Ferndale pipeline facilities connecting the Westcoast system to two large industrial gas consumers in northwest Washington.

Westcoast is forecasting considerable market growth in the Pacific Northwest and California export markets.

In the Pacific Northwest (i.e., the states of Washington, Oregon, Idaho and northwestern Nevada) core, industrial and electrical generation markets are forecast to grow from 5 665.0 10⁶m³ (200 Bcf) in 1991 to 7 110.0 10⁶m³ (251 Bcf) in 2001. Westcoast noted that the electrical generation market sector has become more important in this market area as a consequence of growing electrical demand driven by population growth and increased economic activity. Westcoast forecasts that gas will be the fuel of choice for future fossil fuel fired generating capacity by virtue of its anticipated competitive price advantage over fuel oil.

Westcoast indicated a belief that as electrical energy supplies in the Pacific Northwest become tight, electrical utilities and large industries (e.g., pulp and paper, petrochemicals and forest products) will increasingly turn to gas-fired cogeneration facilities to satisfy their electrical needs.

Westcoast indicated that the completion of the Kern River Gas Transmission Pipeline ("Kern River") from southwest Wyoming to Kern County, California will provide a new route for B.C.-sourced gas into the California market and that several shippers have already contracted for firm service on the Northwest and Kern River systems commencing early 1992. Westcoast noted that additional volumes of gas from other sources are also expected to flow into the California market via expansions of the systems of El Paso Natural Gas Company, Northwest and Pacific Gas Transmission in 1993.

Westcoast argued that it had demonstrated the existence of sufficient long-term, overall domestic and export markets to enable the Board to conclude that there are viable, long-term markets for

the gas originating from the Tommy Lakes area. Further, Westcoast noted that there is no evidence on the record to support the contention by Mobil Oil Canada ("Mobil") that its forecast was "problematic".

3.3 Views of Interested Parties and the Board

Views of Interested Parties

Mobil, while not opposed to Westcoast's application, noted that contrary to Westcoast's evidence, "...export and domestic markets served by the Westcoast system are under intense pressure". Specifically, Mobil commented that: California's need for Canadian gas can best be described as "problematic", the Vancouver Island project gas demand is uncertain, uncertainties are created by the proposed HPCO facilities, and the electric generation demand component of the overall forecast has not yet been clearly defined.

WPL, CHMI and Numac argued that the parties to this project have expended considerable effort and incurred considerable expense to develop the production and gathering system for the Tommy Lakes field on the basis of real gas markets, as is reflected in the executed long-term gas purchase and gas sales contracts.

Views of the Board

The Board finds Westcoast's ten-year overall forecast of domestic and export markets served off the Westcoast system to be reasonable for the purpose of assessing the need for the applied-for facilities. The Board was not persuaded by Mobil's position that Westcoast's overall, long-term market forecast is "problematic" as far as these facilities are concerned.

Similarly, the Board is satisfied with the market and contractual evidence filed by Westcoast with respect to CHMI's export sale to Washington Natural. The Board notes that no party disputed the viability of this export sale.

Therefore, the Board is satisfied that Westcoast's overall market forecast, coupled with CHMI's contractual obligation to Washington Natural and WPL's proposed sale to Westcoast Power Inc and CU Power, demonstrate the existence of viable, long-term markets for the gas originating from the Tommy Lakes field.

Table 3-1
Market Forecast
10⁶m³ (Bcf)

Calendar Year	1991		1992		1995		2001	
<i>Domestic</i>								
Zone 3*	397	(14)	453	(16)	538	(19)	538	(19)
Pacific Northern Gas**	939	(33)	907	(32)	935	(33)	1020	(36)
BC Gas Interior Division***	1445	(51)	1416	(50)	1473	(52)	1643	(58)
BC Gas Coastal Division***	3173	(112)	3088	(109)	3371	(119)	4023	(142)
Pacific Coast Energy Corporation	283	(10)	453	(16)	538	(19)	623	(22)
Electric Generation	57	(2)	397	(14)	538	(19)	765	(27)
Total Domestic	6294	(222)	6714	(237)	7393	(261)	8612	(304)
<i>Export</i>								
NOVA/Gordondale	708	(25)	1246	(44)	1218	(43)	1218	(43)
Northwest/Ferndale Pipelines	5665	(200)	5156	(182)	6289	(222)	7110	(251)
California	-	-	876	(31)	1615	(57)	1785	(63)
Total Export	6373	(225)	7278	(257)	9122	(322)	10113	(357)
Total Domestic and Export	12667	(447)	13992	(494)	16515	(583)	18725	(661)

Source: Application, Tables 4-1, 4-2, and 4-3.

Notes

- * Includes gas deliveries to LDCs serving the Fort Nelson, Fort St. John, Dawson Creek and Tumbler Ridge areas, as well as to industrial customers directly connected to the Westcoast system in northeastern B.C.
- ** Serves north-central and northwest B.C. Over 90 percent of PNG's throughput is to industrial customers (eg. mining, smelting, and pulp and paper).
- *** The interior and coastal divisions of BC Gas serve central B.C., the Greater Vancouver and the Lower Fraser Valley areas, respectively. Annual market growth of 3 to 5 percent is forecast primarily on the strength of core market sector expansion.

4.1 The Pipeline

The proposed facilities would consist of approximately 61.5 km of 273.1 mm O.D. (10") pipe extending from near the compression facilities of WPL at the Tommy Lakes gas field in northeastern B.C. to the terminus of Westcoast's Jedney pipeline. The cost of the facilities is estimated to be approximately \$15.8 million. The pipeline would transport sour gas-condensate for processing at the McMahon gas plant.

Westcoast indicated that the producers have agreed to deliver the gas at the maximum design operating pressure of the pipeline of 6 895 kPa (1 000 psi), which is 1 379 kPa (200 psi) above the minimum delivery pressure specified in the General Terms and Conditions-Service section of Westcoast's pipeline tariff. Westcoast provided the capacities and surcharges for alternative pipe sizes as shown in Table 4-1:

Table 4-1
Pipeline Sizing Considerations

Pipe Diameter mm (inches)	Capacity 10 ³ m ³ /d (MMcfd)	Surcharge⁽¹⁾ ¢/10 ³ m ³ (¢/Mcf)
219.1 (8)	510 (18)	229.4 (6.5) ⁽²⁾
273.1 (10)	963 (34)	437.7 (12.4)
323.9 (12)	1 558 (55)	628.3 (17.8)

-
- (1) The surcharge is calculated pursuant to Westcoast's Raw Gas Transmission Expansion Policy which is discussed in more detail in Chapter 7 of these Reasons. The unit surcharge provided in this table is calculated at 100% load factor.
- (2) It is doubtful that the two times test, described more fully in Chapter 7 of these Reasons, would apply to a pipeline with a capacity as close to the contracted volume as the 219.1 mm (8 inch) OD pipeline has in this case. Therefore the surcharge would likely be significantly greater than that provided by Westcoast for this size of pipeline.

Westcoast indicated that the 273.1 mm O.D (10") was selected having regard to the upstream pressure available from the producers, and the forecast peak deliverability of $850 \times 10^3 \text{ m}^3/\text{d}$ (30 MMcfd). Westcoast also indicated that while the 219.1 mm O.D. (8") would have been sufficient to handle the initial contract volume of $486 \times 10^3 \text{ m}^3/\text{d}$ (17 MMcfd), looping or additional compression or both would have been required at a future date to handle any incremental capacity. Westcoast stated that the proposed pipe size represented the optimum long-term choice for the design, and development of the Tommy Lakes area.

Views of Interested Parties

WPL concurred with the optimization conclusions of Westcoast and has sized its compressors to suit a 273.1 mm O.D. (10") pipeline

Views of the Board

The Board notes that Westcoast has consulted with the producer responsible for the payment of the surcharge on the sizing of the facilities. The Board accepts Westcoast's line size selection.

4.2 Other Technical Considerations

Westcoast indicated that in the event of a significant leak on the proposed facilities, pressure monitoring and control equipment at the producer's wells will automatically shut off the flow of gas to the pipeline. It also indicated that check valves installed at the Jedney pipeline connection will prevent gas drawback from that system. Since the pipeline will lie in a remote location, no line break controls will be installed along its length.

Liquid level monitoring will be carried out by WPL at its upstream compressor site. The proposed pipeline will be pigged frequently to remove any liquids accumulating in the pipeline. Safe pigging procedures, as outlined in Westcoast's "Pipeline Operation and Maintenance Manual", will be followed during the operation of the applied-for facilities.

Views of the Board

The Board is satisfied that additional line break controls are not required.

Land Use, Environmental and Socio-Economic Issues

5.1 Assessment Process

As part of its application, Westcoast submitted an Environmental and Socio-Economic Assessment of the Tommy Lakes pipeline. That assessment detailed the probable environmental effects and directly related social effects of the project as well as the proposed measures to mitigate those effects.

The environmental and directly related social effects of the project were considered concurrently under two separate processes:

- (i) a project review pursuant to the Board's mandate under Part III of the Act; and
- (ii) an environmental screening of the application pursuant to the EARP Guidelines Order, to the extent that there was no duplication with the Board's mandate under Part III of the Act.

Each process was conducted pursuant to the Board's Directions on Procedure as set out in Hearing Order GH-2-92. As part of the procedure, the comments of interested parties were invited with respect to each of these processes. Parties who submitted comments related to the environmental and directly related social effects of the project were the Blueberry River Indian Band ("the Band"), the Department of Fisheries and Oceans ("DFO") and the B.C. Ministry of Energy, Mines and Petroleum Resources ("MEMPR") (with attachments from the B.C. Ministry of Environment, Lands and Parks ("MOELP")).

Views of the Board

Subsequent to the review of the environmental information respecting the proposed Tommy Lakes pipeline and the responses received from interested parties, the Board made the following determinations:

- (i) respecting the potential effects which could result from the proposal, the Board determined pursuant to Paragraph 12(c) of the EARP Guidelines Order that the potentially adverse environmental effects, including the social effects directly-related thereto that may be caused by the proposal, would be insignificant or mitigable with known technology; and
- (ii) respecting the environmental, directly-related social and land-related effects attributable to the project as proposed, the Board determined that those issues would be appropriately considered in this proceeding as part of its procedures under Part III of the Act, consistent with Section 8 of the EARP Guidelines Order.

5.2 Early Public Notification

Development of the Tommy Lakes Pipeline potentially affects the jurisdictional interests of the MOELP, the MEMPR, and the B.C. Ministry of Forests ("MOF"). Westcoast indicated in a letter to the Board dated 8 August 1991 that it had introduced the proposed Tommy Lakes pipeline project to the above-noted provincial agencies. As a result of that early public notification, extensive discussions were held prior to the Board's public hearing with respect to routing alternatives, potential land use and other possible environmental conflicts.

In addition, Westcoast discussed the effects of the proposed project on fishery and fish habitat issues with the DFO. As a result of those early discussions, DFO was able to present the Board a Westcoast memorandum at the commencement of the hearing in which it had undertaken to comply with a number of additional conditions involving additional studies of fisheries potential and specific procedures for fisheries habitat protection. (The highlights of these undertakings are included as Appendix III to these Reasons).

As part of its application process and consistent with the Board's Memorandum of Guidance Concerning Early Public Notification of Proposed Applications, Westcoast indicated that on 21 June 1991 it had met with members of the Treaty 8 Tribal Association, members of the Blueberry River Band, Doig River Band, Halfway River Band, Prophet River Band, Salteau Band and the West Moberly Band to discuss the proposed Tommy Lakes pipeline project. Subsequently, numerous discussions and meetings were held involving Westcoast and the Band allowing for both early public input and continued input as the project developed.

Views of the Board

The Board is satisfied that Westcoast has notified and discussed the proposed application in an adequate and timely fashion with all parties having an interest in the project.

5.3 Route Selection Criteria and Selection Process

The Tommy Lakes Pipeline project will be a buried natural gas pipeline approximately 61.5 km in length, within an 18.3 metre-wide right-of-way. The project will result in a surface disturbance to approximately 120 hectares ("ha") of land, including the extra work space that may be required during the construction period. To minimize the potential effects from such disturbance, Westcoast undertook a route selection process which evaluated potential conflicts with the important biophysical features and land uses in the area.

Westcoast submitted that the selection of the proposed route location was based on the following criteria:

- (a) Construction/Operation Criteria
 - (i) tie-in points;
 - (ii) construction/operation difficulties;
 - (iii) access; and
 - (iv) future system expansion.
- (b) Biophysical Criteria
 - (i) fish and wildlife; and
 - (ii) areas of high environmental sensitivity.

- (c) Land Use Criteria
 - (i) land uses;
 - (ii) historical resources; and
 - (iii) use of existing corridors.

The Tommy Lakes pipeline project is located on undeveloped Crown land in northeastern B.C., within the Boreal White and Black Spruce bio-geoclimatic zone. The topography is flat to moderately rolling, with steep pitches occurring on the slopes to major watercourses. The area is characterized by two predominant conditions: mixed wood forests on better drained tills and localized glaciofluvial outwash; and black spruce-dominated forests and muskeg on glaciolacustrine and poorly drained deposits. The corridor is intersected by several small to moderately-sized creeks. Westcoast testified that the moderately-sized creeks contain spring and early summer spawning fish species, such as Arctic grayling, white sucker and lake chub.

To avoid the Sikanni Chief River canyon and deeply incised portions of several of its east-west tributaries, only routing alternatives within a 4 to 12 km wide corridor east of the river were investigated. Routing outside of this corridor was not considered practical from a geotechnical or economic perspective, nor warranted from an environmental or socio-economic perspective, based on regional conditions.

The route selection process initially involved a review of air photo coverage of the project area. Potential alternatives were plotted on provincial 1:50,000 scale airphoto mosaics and evaluated during follow-up field investigations. Members of the Band assisted Westcoast during the field investigations. Follow-up meetings were also held with provincial ministry representatives.

Westcoast submitted that in order to facilitate the assessment of routing alternatives, it had divided the route into three segments as shown in Figure 5-1. Segment A consisted of two routing options covering the initial 8 to 10 km of the pipeline, which were identical except for a short deviation near the commencement of the proposed line so as to avoid an area of deep-seated sliding. Segment B consisted of two significantly different routing options covering the middle 35-38 km of the pipeline, with the western route being shorter in length but crossing three moderate to high fishery habitat quality watercourses, while the alternative crossed longer sections of rock and deep muskeg but avoided watercourses with fishery resources. Westcoast noted that if the eastern route were selected in this segment, construction costs would increase by approximately \$2 million. Segment C consisted of a single routing option over the final 16 km of the pipeline.

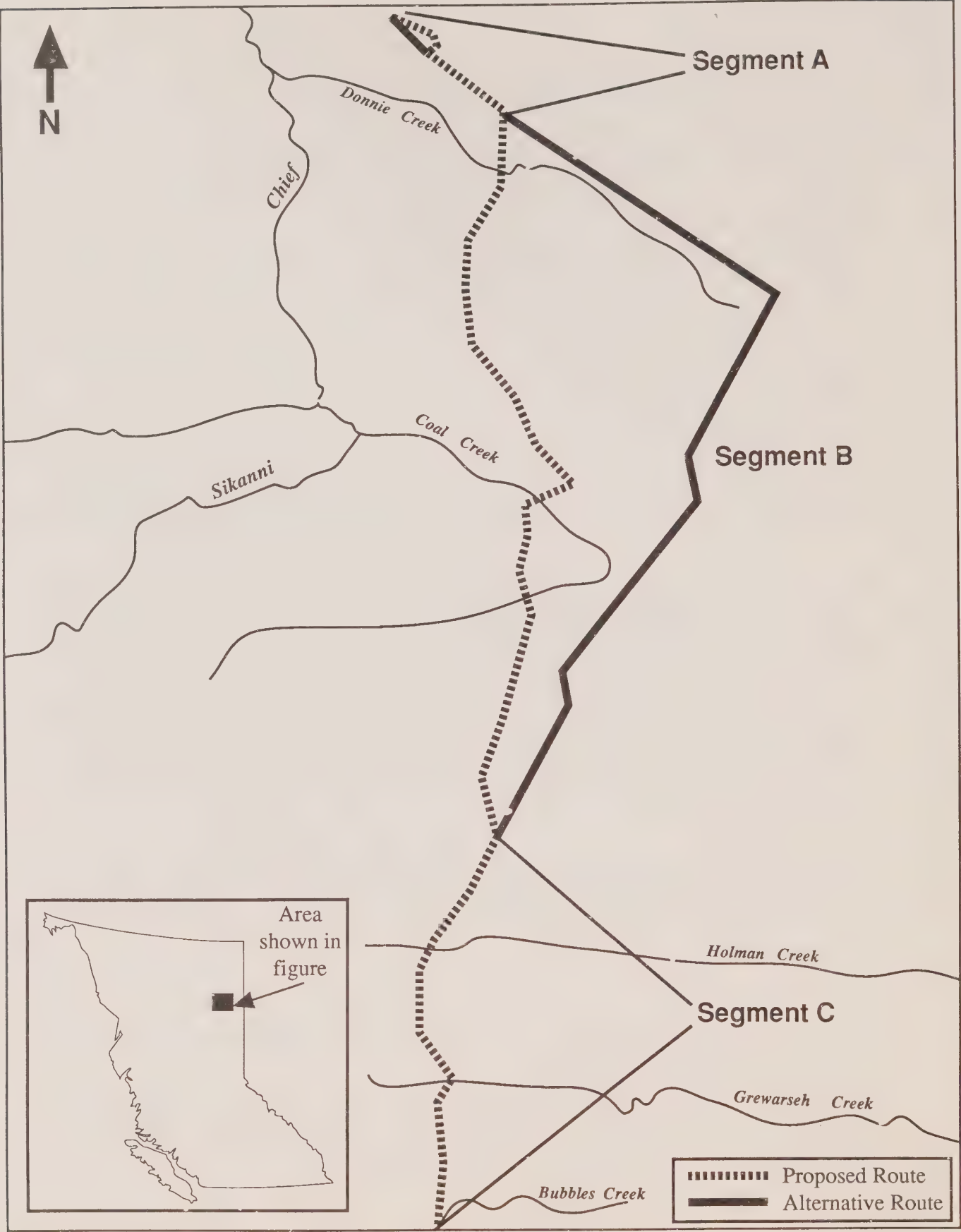
Westcoast indicated that for Segment A, the slightly longer routing option, which avoided the deep-seated sliding was the preferred route. For Segment B, Westcoast indicated that the effects on watercrossings and associated slope approaches could be adequately mitigated and, on the basis of an overall assessment according to its criteria, it selected the western route as the preferred alternative.

Views of Interested Parties

The Band indicated that it would prefer the proposed pipeline to follow the western route of Segment B. This would limit the opening of new access roads into forested areas.

Although DFO indicated a preference for the eastern alternative in Segment B, it indicated that the effects to fish and fish habitat of either the eastern route or western route of this segment could be satisfactorily mitigated with known technology given Westcoast's commitments (Appendix III). In this case, either route would be acceptable to DFO.

Figure 5-1
Location of the Alternative Routes for the Tommy Lakes Pipeline



Views of the Board

The Board is satisfied with the route selection criteria adopted by Westcoast as well as Westcoast's approach in applying those criteria in the determination of the proposed pipeline route. The Board finds the general route proposed by Westcoast to be acceptable.

5.4 Land Requirements

The right-of-way for the proposed Tommy Lakes pipeline would be located entirely within unsurveyed Crown lands in the Peace River District. In order to permit the Company to construct, operate and maintain a pipeline within an 18.3 m wide right-of-way on Crown lands, Westcoast would apply to the MOELP for a Licence of Occupation. Westcoast anticipated that no difficulties would be encountered in obtaining the required licence. Following construction and final survey, Westcoast would secure a statutory right-of-way from the Province of British Columbia.

Westcoast stated that the majority of construction travel would be routed along the working side of the right-of-way. Bridge spans would be installed on major creeks, culverts would be used on smaller tributary streams, and corduroy would be utilized to stabilize soft, wet portions of the right-of-way.

Access to the northern 20 km of the pipeline would be provided by the pipeline right-of-way as noted above. For the southern two-thirds of the route, the existing dry or all-weather access roads developed for the Laprise and Bubbles gas field infrastructure would be available in the immediate vicinity of the proposed right-of-way, and these roads would undoubtedly support the level of traffic forecasted during project construction.

Views of Interested Parties

The Band expressed concern that any new access to its traditional lands, specifically the proposed right-of-way, would increase the opportunities for intrusion by hunters, anglers and developers.

Views of the Board

The Board finds that Westcoast's anticipated land requirements for pipeline construction, installation and operation are reasonable and justifiable.

The Board agrees with the Band's concern regarding the effect of opening up new access to the public along a new pipeline right-of-way. The Board notes that Westcoast would use existing roads and access routes for access to and along the right-of-way. The Board would require that Westcoast provide evidence that it has secured the necessary authorization for the right-of-way.

5.5 Environmental Effects

Westcoast identified a number of environmental effects which could result from the pipeline construction. Those effects, and the mitigative measures proposed by Westcoast, are as follows:

(a) Soil Disturbance and Slope Erosion

The proposed route encounters flat to moderately rolling terrain, with steep pitches occurring on the slopes to numerous watercourses. Westcoast indicated that because of the clay/silt till deposits and associated perched water tables which occur throughout the area, shallow sliding as well as deeper-seated slumps are common terrain features.

Westcoast proposed to use a combination of water control devices and measures to mitigate surface stability problems. These devices and measures consist of surface diversion berms, French drains, impermeable ditch plugs and revegetation. Westcoast testified that these measures will be applied on a case-by-case basis and will be in place prior to the onset of the winter season.

Wet organic soils will be allowed to revegetate naturally, but Westcoast will revegetate the remaining portions of the right-of-way by aerial seeding with an agronomic seed mix.

(b) Fisheries

The Tommy Lakes pipeline will cross ten watercourses with low to high quality fish habitat. Since no historical fisheries data was available for the streams to be crossed, Westcoast collected site-specific fisheries and habitat information. Based on the results of that effort, it was determined that four moderately sized watercourses contain spring and early summer spawning fish species.

Pipeline construction near and in watercourses may result in the disturbance, and possible loss, of existing fish habitat at, and downstream of, the crossing site. Two potential effects of pipeline construction and operation on watercourses identified by Westcoast were the loss of riparian vegetation on stream banks; and the potential for increased sediment and turbidity loads. The possible introduction of toxic materials into a watercourse due to a spill event during construction is another potential effect on watercourses. However, Westcoast was confident that with the consistent application of suitable geotechnical and engineering measures at the slopes and stream crossings, along with good construction practices, these potential effects could be minimized. Westcoast proposed to implement an extensive number of geotechnical and engineering measures, including both those prescribed under its standard construction practices and those identified in its memorandum to DFO setting out a number of undertakings. The undertakings that Westcoast offered to DFO (Appendix III) covered areas such as forest and road access, slope stabilization, additional fisheries studies, inspection requirements, water crossing designs, restorative measures and plans and provided for the future involvement of DFO and MOELP representatives. Of particular note are the studies and reports that Westcoast undertook to prepare as follows:

- (i) additional geotechnical studies on slope approaches;
- (ii) final construction crossing designs;
- (iii) additional fishery studies at Holmar Creek and an unnamed tributary to the Beaton River;
- (iv) forestry and access plan;
- (v) additional fishery sampling results (at locations in which the stream crossings would be installed after 31 August 1992); and
- (vi) final restoration plans.

(c) Hydrology and Drainage

The surface drainage of the area consists of meandering watercourses with extensive areas of poorly drained scrub coniferous and shallow muskeg. Environmental concerns relate mostly to the disturbance of drainage during construction and its potential impairment over the long-term. Westcoast submitted that vehicle crossing sites along the right-of-way would consist of four streams requiring culverts and one stream requiring a temporary bridge. A temporary bridge would also be constructed on the existing access road. Westcoast would avoid disturbing the remaining five streams by not allowing vehicle access across them.

Westcoast submitted that a significant portion of the line would encounter moderately wet scrub coniferous forest with water tables at or near the surface. Construction and corduroy access

installation can disrupt local drainage systems by redirecting or blocking surface and subsurface flows. Westcoast indicated that impermeable ditch plugs would be installed prior to backfilling and sections of corduroy would be removed during clean-up to ensure that natural drainage patterns through the wet areas are maintained. Accordingly, Westcoast submitted that construction of the pipeline would have no significant hydrological impact on any of the watercourses.

(d) Heritage Resources

Westcoast completed an archaeological overview of the proposed route and submitted a report to the Board. This report was also submitted to, and accepted by, the B.C. Ministry of Municipal Affairs, Recreation and Culture, Archaeology Branch. The archaeological report did not identify any prehistoric sites, although the potential for one historical feature was identified. The proposed pipeline may cross a branch of the Fort Nelson Trail used during the Klondike Gold Rush.

The principal concern related to heritage resources would be the potential disturbance and loss of archaeological resources during pipeline construction. Westcoast submitted that should any artifacts of apparent significance be uncovered during construction, work will be suspended in the vicinity of the find until a qualified archaeologist could assess the area and make any necessary mitigative recommendations.

(e) Wildlife

Westcoast indicated that the Tommy Lakes pipeline could result in several environmental effects to wildlife and wildlife users. Included in those effects were sensory disturbance, blockage of wildlife movement, habitat alteration, increased access and potential increase in hunting activities, animal mortalities resulting from vehicle collisions, and the disruption of local hunting and trapping patterns.

Westcoast submitted that the effects of wildlife sensory disruption would be reduced by avoiding the sensitive reproductive period for most wildlife species, normally Spring and Fall. In addition, to reduce the potential of disturbing unfledged raptors, Westcoast would suspend construction activities within 100 m of any identified active nest until MOELP personnel can be contacted for special instructions or approval to proceed. To minimize the possibility of blocking wildlife movement, breaks in spoil piles and slash windrows would be installed at approximately 900 m intervals. From a habitat perspective, the loss of forest cover would have negligible effects on regional wildlife populations, particularly if dense vegetative cover can be established following construction. Respecting the issues of increased access and the potential increase in hunting activity, Westcoast indicated that access to the right-of-way would not be possible for conventional trucks through significant continuous stretches, but would provide access for all-terrain vehicles and snowmobiles. Westcoast offered to mitigate some of the potential for increased access by installing control measures such as rollbacks and berms, if requested by MOELP. Westcoast submitted that animal kills during the project due to traffic and opportunistic kills would be negligible due to the rules of conduct relating to driving speed and limiting the possession and use of firearms. Westcoast submitted that adequate signage warning the public of construction would be installed to reduce the temporary disruption of recreational and native hunting patterns. Disruption to trappers would be avoided by adhering to the Summer/Fall construction period.

(f) Forest Vegetation

Westcoast submitted that the clearing of the right-of-way would effectively change approximately 120 ha of boreal forest to a persistent grass community. No vegetative communities warranting

special attention are known to occur along the route. Westcoast has estimated that timber loss of merchantable conifers would be approximately 7 500 m³. Because of this relatively high volume of available timber, Westcoast proposed to salvage coniferous trees and implement strict operating procedures to limit timber spoilage. Westcoast would require the use of deciduous species and non-merchantable conifers for corduroy roads in wet areas. Westcoast submitted that it would dispose of all slash remaining after timber salvage by burning. Burning permits may not be issued by MOF until after the fire season has ended. In that case a small crew would have to be re-mobilized to complete the work.

(g) **Spills and Hazardous Materials**

Environmental effects may result if hazardous materials such as fuels and lubricating oils are inadvertently spilled or improperly disposed. These effects may consist of contaminated soils, surface water and groundwater, and the possible introduction of toxic materials to vegetation or fish and wildlife. Westcoast submitted contingency measures which set out procedures for the handling and disposal of hazardous materials in the event of a spill.

Views of Interested Parties

The Band expressed several environmental concerns relating to the Tommy Lakes pipeline project, including environmental protection and pollution, the potential disturbance of unidentified burial grounds, the accuracy of the fishery studies, and the adequacy of the proposed mitigative and restorative measures. The Band indicated that it had worked with Westcoast for five months to develop, to the extent possible, reasonable environmental protection measures. The Band further indicated that should the pipeline be approved, it would like to have conditions imposed which would ensure that effects on the environment are limited, the right-of-way is restored to its original state, and pollution causing activities are prevented.

DFO agreed that potentially significant effects to fish and fish habitat can be satisfactorily mitigated with known technology, as undertaken by Westcoast (Appendix III). If the project were to be approved, DFO recommended that the Board condition the Certificate to require Westcoast to comply with the undertakings it had made to DFO.

DFO indicated that the reduced risk window of July 15 to August 31 for in-stream construction work is a guideline and not a directive. DFO determined this window by considering the sensitive time periods for the fish species present in the general area. DFO indicated that, in addition to the spring and early summer spawners identified by Westcoast, a fall spawning species (bulltrout) may be present in streams to be crossed by the pipeline.

Views of the Board

The Board is of the view that if the proposed environmental protection measures are implemented, the construction and operation of the Tommy Lakes pipeline would create only minimal environmental effects of a local and temporary nature.

With respect to the protection of fish and fish habitat, the Board is satisfied with the resolution between Westcoast and DFO as a result of their consultative process. The Board considers that the undertakings Westcoast made to DFO are helpful and would therefore adopt DFO's suggestion to incorporate these as conditions, should a Certificate be issued.

The Board appreciates the concerns expressed by the Band and is satisfied that Westcoast has addressed these concerns adequately, particularly the issues of heritage resources and pollution. With respect to heritage resources, the Board is satisfied that Westcoast would take the appropriate measures if an unmarked aboriginal burial or other archaeological site is discovered

during construction. With respect to environmental pollution, the Board is satisfied that Westcoast would take the appropriate steps to ensure spills and hazardous materials are handled properly.

5.6 Environmental Reporting

Westcoast identified a number of reporting mechanisms that would be undertaken to ensure that any environmental effects were satisfactorily mitigated. These reporting mechanisms, and Westcoast's proposed actions, are as follows:

(a) Environmental Issues List

Although an Environmental Issues List ("EIL") was not provided in its application, Westcoast testified that such a list could be prepared if requested by the Board.

(b) Environmental Inspection

Westcoast indicated that a supervisory staff consisting of a Chief Inspector and several activity inspectors would be maintained on-site throughout the construction period. Westcoast further indicated that it would retain environmental inspectors responsible for assuring contractor compliance with approved environmental design and procedures, and available to address any site-specific concerns that could arise during construction.

Westcoast indicated that it was considering retaining a Band member with knowledge of the traditional resource values in the project area as an environmental inspector. Westcoast also undertook to have independent professional geotechnical and fisheries personnel on-site to provide expert advice.

Westcoast indicated that its environmental inspector would discuss environmental matters with, and obtain applicable approvals from, DFO and MOELP during construction.

(c) Post-Construction Monitoring

Westcoast submitted that personnel would visit the pipeline route the year following construction to assess the effectiveness of revegetation, erosion controls, and other environmental protection planning measures. Westcoast also indicated that appropriate remedial action would be planned as necessary.

Once stable ground cover has been established, Westcoast would undertake routine surveillance flights over the pipeline right-of-way. More intensive checks for surface instability and leaks would be undertaken as required.

Westcoast indicated that it would provide post-construction reports to the Board, as required.

Views of Interested Parties

The Band testified that an environmental inspector should be on-site for the duration of the project. The Band expressed concern regarding the independence of the people involved in making decisions concerning environmental matters. The Band also expressed the view that, environmentally, the pipeline should be constructed to the Band's satisfaction as well as that of the provincial agencies.

DFO pointed out its authority for ensuring the protection of fish and fish habitat under its mandate pursuant to the Fisheries Act, and in compliance with the objectives of DFO's Policy for the Management of Fish Habitat.

Views of the Board

With respect to environmental issues associated with the proposed construction and the recommended mitigative measures, the Board is of the view that an EIL might assist Westcoast in focussing its inspection efforts during construction on areas requiring attention and in implementing an effective environmental monitoring program. Therefore, the Board would require Westcoast to submit an EIL in advance of the commencement of construction so that, as work proceeds, Westcoast could determine whether the environmental objectives were being achieved.

The Board appreciates the Band's concern regarding the adequacy of environmental protection during construction. The Board is of the view that adequate environmental protection would be ensured by virtue of Westcoast's existing procedures and undertakings (including possible consultation with a Band member on environmental matters), MOELP's permitting process, DFO's approval requirements, and the Board's own environmental requirements and inspection program. Moreover, in addition to DFO, MOELP and Board inspections, the Board is satisfied that Westcoast will provide a sufficient number of environmental inspectors to ensure proper environmental protection. The use of consultants with professional credentials, retained by the proponent to provide specialized advice, is an accepted procedure. The Board is further of the view that such consultants are capable of making responsible and independent decisions.

In terms of post-construction monitoring, the Board would also require Westcoast to file, for Board approval, a post-construction environmental report within six months of the date that leave-to-open is granted. The report would address all the environmental issues that have arisen up to that time and also provide the status of each issue and the measures to be implemented for the resolution of any outstanding issues. The Board would require Westcoast to file a similar report by 31 December following each of the first two full growing seasons after construction. These reports would also address the recovery of the disturbed areas.

Overall, the Board is of the view that Westcoast's proposed environmental inspection and post-construction monitoring would be satisfactory to ensure adequate environmental protection. Towards this end, Westcoast's performance will be monitored by DFO, MOELP, and the Board.

5.7 Local Employment Practices

The bulk of the project labour force would be employed by contractors. Westcoast indicated that its policy requires contractors to employ as many local people as possible. In addition, Westcoast is committed to hiring Band members for the project, as well as working with the Band to enhance native employment prospects within the industry. Notwithstanding the policy and commitments, Westcoast was unable to provide an estimate of the percentage of the project workforce that would comprise local or native employees, and was similarly unable to indicate the appropriate goals for local and native employment and the steps that would be taken through its contractors to achieve these goals.

Views of Interested Parties

The Band stressed the importance of employment opportunities for its people. It also registered a concern that if project contracts are let to out-of-province firms, then only a small percentage of jobs would be filled locally.

Views of the Board

With respect to local hiring in general and Band employment in particular, the Board is encouraged by Westcoast's commitment to take all reasonable steps to ensure that qualified, local labour is hired. However, the Board notes that the absence of criteria defining an acceptable level of local employment severely restricts Westcoast's ability to monitor and measure performance.

The Board is of the view that should the pipeline be approved, a certificate condition be included requiring Westcoast to report regularly on the size of the project labour force with respect to local, native and non-local components. These reports would include an assessment of the circumstances promoting or obstructing local and native employment. Such reports would provide one basis for measuring how well Westcoast is meeting its socio-economic commitments.

5.8 Cumulative Effects

The Band raised the issue of cumulative effects⁽¹⁾ in its evidence. The Band's main concern was the impact of unplanned development on its traditional hunting, fishing and gathering land, resulting in the destruction of habitat, increased pollution, and greater access to pristine areas. The Band's position, shared by Westcoast, is that to avoid or control such effects, the Band must be involved in the management and monitoring of resource development on traditional lands. The Band's spokesperson summed up the case for involvement as follows:

"I would invite the petroleum companies to come and visit us in our community . . . I would invite them to do the same thing as Westcoast did and approach us, if we are to arrive at the same sort of working relationship. We do not want confrontation with anybody, but we do want to protect the land we have out there, what we have left of it. It is deteriorating to us, too fast too quickly. We have to protect that."

The Band did not identify any unacceptable cumulative effects arising out of the Tommy Lakes project per se.

Views of the Board

The Board acknowledges the Band's concerns that oil and gas exploration and development has had environmental and socio-economic effects in the region, and will likely continue to do so. Specific evidence on the nature or extent of project-related, cumulative effects was not put forward during the GH-2-92 hearing. At a general issue level, there was no suggestion that the project would create significant effects that could not be mitigated. It appears that the process of consultation between the Band and Westcoast has resulted in ways and means to avoid, minimize and resolve potential adverse effects, and at the same time, promote positive ones.

During the Hearing, there appeared to be an expectation that the Board should exercise regulatory authority over some areas of energy resource development not under its jurisdiction. The Board notes that agencies of the Province of British Columbia are responsible for matters such as well operation, well site maintenance, and producer compressor station siting, and construction. The most appropriate route for consultation on these and other issues falling within Provincial responsibility is with the Provincial agency directly concerned.

(1) Cumulative effects are generally referred to as adverse changes to local or regional social and/or economic conditions, arising out of the interactive or additive impacts of several projects or development activities.

Economic Feasibility of the Project

Westcoast's evidence indicated that WPL had executed a 10-year firm service agreement for transportation service on the pipeline. Further, this contract provides for the payment by WPL of the surcharge resulting from the application of the Raw Gas Transmission Facility Expansion Policy.

Views of the Board

The Board is of the view that WPL's commitment to a 10-year firm service agreement with Westcoast, including a commitment to pay the applicable surcharge according to the Raw Gas Transmission Facility Expansion Policy, is strong evidence of the economic need for the facilities. This evidence, taken together with the evidence on the adequacy of reserves and productive capacity as well as the existence of a viable long-term market for the gas, is sufficient to satisfy the Board that the economic feasibility of the project has been demonstrated.

Toll Surcharge for the Tommy Lakes Pipeline

The determination of the need for a surcharge for new facilities added to Westcoast's gas gathering system is governed by Westcoast's Raw Gas Transmission Facility Expansion Policy ("RGT Policy"), as approved by the Board in its RH-1-90 Decision. In accordance with the RGT Policy, Westcoast calculated a demand surcharge for the proposed facilities of \$133.26 per $10^3\text{m}^3/\text{d}$ per month (\$3.773 per mcf/d per month) by applying the two-times test and taking into consideration the incremental downstream processing revenues. Westcoast justified its use of the two-times test by pointing out that the capacity of the proposed facility significantly exceeded the initial requirements, thereby accommodating the expected future gas development in the area. Westcoast also noted that it was appropriate to reflect a credit for 50 percent of the incremental contracted downstream processing revenue since the incremental contract volume would utilize excess capacity at the downstream processing facility.

Views of the Board

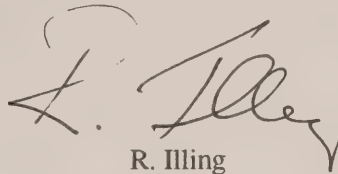
The Board accepts Westcoast's calculation showing that a demand surcharge of \$133.26 per $10^3\text{m}^3/\text{d}$ per month (\$3.773 per mcf/d per month) is required. The Board will issue the appropriate Order under Part IV of the Act once a Certificate is issued for this project.

Chapter 8

Disposition

The Board approves the application by Westcoast Energy Inc., pursuant to Part III of the Act, for a Certificate of Public Convenience and Necessity for the Tommy Lakes pipeline. Upon approval by the Governor in Council, the Board will issue Certificate No. GC-82 certifying the applied-for facilities.

The foregoing chapters, together with Certificate No. GC-82, constitute the Board's Reasons for Decision on this application.

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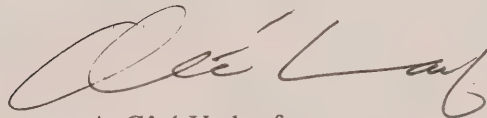
R. Illing

Presiding Member

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A. B. Gilmour

Member

A handwritten signature in cursive script, appearing to read "A. Côté-Verhaaf".

A. Côté-Verhaaf

Member

Calgary, Canada

April 1992

PART III MATTERS

1. The appropriateness of the specific route proposed for the Tommy Lakes pipeline.
2. Alternative routes within Westcoast's general study area.
3. The adequacy of Westcoast's route selection criteria and methodology.
4. The availability of gas to be transported by the pipeline.
5. The adequacy of Westcoast's downstream facilities to accommodate the additional natural gas throughput.
6. The reasonableness of Westcoast's forecast of domestic and export demand for natural gas.
7. The potential environmental effects and the directly related socio-economic effects of the proposed facilities during and after construction.
8. The completeness and effectiveness of Westcoast's early public notification process.
9. The appropriate terms and conditions to be included in any Certificate or Order which may be issued

PART IV MATTERS

1. The appropriateness of the proposed surcharge.

Certificate Conditions in Respect of the Tommy Lakes Pipeline

1. The pipeline facilities for which this certificate is being issued ("the applied-for facilities") shall be the property of and shall be operated by Westcoast.
2. (a) Westcoast shall cause the applied-for facilities to be designed, manufactured, located, constructed and installed in accordance with those specifications, drawings, and other information or data set forth in its application, or as otherwise adduced in evidence before the Board, except as varied in accordance with paragraph 2(b) hereof.
(b) Westcoast shall cause no variation to be made to the specifications, drawings or other information or data referred to in paragraph 2(a) without prior approval of the Board.
3. Westcoast shall implement or cause to be implemented all the policies, practices, recommendations and procedures for the protection of the environment included in its application, its Procedures Manual For Environmental Engineering, March 1987, or as otherwise adduced in evidence before the Board in the GH-2-92 proceedings, especially those conditions agreed to between Westcoast and the Department of Fisheries and Oceans.
4. Prior to the commencement of construction, Westcoast shall file with the Board evidence to demonstrate that it has secured the necessary Temporary Permit from the Government of British Columbia and the necessary approvals from the Department of Fisheries and Oceans for the applied-for facilities.
5. Westcoast shall, at least 10 days prior to the commencement of construction of the applied-for facilities, file with the Board a detailed construction schedule or schedules identifying the major construction activities.
6. Westcoast shall, at least 10 days prior to the commencement of construction of the applied-for facilities, file with the Board a copy of its Environmental Issues List, prepared in accordance with section 28(1)(a) of the Board's *Onshore Pipeline Regulations* (SOR/89-303). If additional issues arise during construction, Westcoast shall file an updated Environmental Issues List in accordance with section 28(2) of the Board's *Onshore Pipeline Regulations*.
7. During construction, Westcoast shall file updated construction schedules, if any significant change to the schedules provided pursuant to condition 5 occur.
8. During construction, Westcoast shall file biweekly status reports on native and local employment, including discussion of any issue and/or problems, and shall file a final performance report within three months of the date that the leave-to-open is granted for the applied-for facilities.
9. Westcoast shall, within six months of putting any of the applied-for facilities into service, file with the Board a report providing a break-down of the costs incurred in the construction of the facilities, including reasons for significant differences from the estimates provided in the application.

10. Westcoast shall file with the Board post-construction environmental reports in accordance with section 58 of the Board's *Onshore Pipeline Regulations*.
11. Unless the Board otherwise directs prior to 31 December 1993, this certificate shall expire on 31 December 1993 unless the construction and installation with respect to the applied-for facilities has commenced by that date.

Highlights of the Undertakings of Westcoast Energy Inc. to the Department of Fisheries and Oceans

The following points summarize Westcoast's undertakings to the Department of Fisheries and Oceans in respect of the Tommy Lakes Project, as set out in a memo from Westcoast to the Department dated 23 March 1992.

Westcoast agrees to undertake the following:

1. As detailed engineering construction designs/profiles for the larger stream crossings with difficult approach slopes (Holman Creek, Grewatsch Creek, Donnie Creek and both crossings of Coal Creek) are requested for DFO review, Westcoast will forward preliminary construction designs and final designs to DFO for review in mid-April 1992 and mid-May 1992, respectively.

Westcoast will plan and construct each stream crossing so that the pipeline (at the crossing site) is installed and protected with backfill in one continuous operation. Special crews will be employed for construction of the stream crossings.

Further fisheries studies (as per MOELP's protocol) will be conducted for Holman Creek (km 47.71) and the unnamed tributary to the Beatton River (km 57.76) to determine the fisheries sensitivities for these streams. The fisheries investigations will be conducted in July 1992. The results of the fisheries investigations and a suitable proposed crossing method based on same will be forwarded to DFO for review and approval prior to construction.

Vehicle crossing sites for the following streams will be located within the pipeline right-of-way:

tributary to Sikanni Chief River (km 2.28) - culvert
tributary to Sikanni Chief River (km 4.98) - culvert
Donnie Creek - temporary 50 foot single-bridge span
tributary to Holman Creek - culvert
Bubbles Creek - culvert

However, for the northern Coal Creek crossing, a temporary bridge will be built on the existing road.

Details on culvert and bridge designs for each crossing will be outlined in Westcoast's Forestry and Access Plan for the Tommy Lakes Pipeline Project which will be forwarded to DFO mid-April 1992 for review and approval. Westcoast will adopt the following guidelines for bridges and culverts:

Temporary bridges will be designed such that the placement of instream fill and piers is avoided. The bridge span will be designed to accommodate maximum flows anticipated for the period that the structure will be in place, and be constructed in a manner which minimizes siltation and avoids disrupting fish habitat.

Temporary culverts must be designed for a minimum 25-year peak flow, for the time of year that the culvert will be in place, for fish passage if required and must be constructed to minimize siltation and fish habitat impacts.

Temporary structures shall be removed during final reclamation and the streambed and banks returned to natural configurations, with suitable stabilization and erosion measures in place.

2. A list of stream and bank restoration options has been provided by The Delta Environmental Management Group Ltd. (Memo dated March 16, 1992). At each stream, measures will be selected which best suit the conditions and objectives for that area.

Instream Enhancement Measures suggested include:

- capping ditchline and gravel/cobble
- boulder clusters

Bank Restoration Measures suggested include:

- bank recontouring
- riprapping or armouring
- tree revetments
- log walls
- shrub plantings with native shrubs

Westcoast has suggested that the final stream/bank restoration measures will be jointly determined on-site by DFO, MOELP and Westcoast's consultants. DFO has agreed to this on-site determination which is anticipated after instream construction is completed. Westcoast will provide information on and photographs of pre-construction bank/streambed features for each crossing for comparison and development of restoration measures.

3. Approach Slope Protection Measures suggested include:

- wattles
- surface diversion berms
- subsurface drains (eg. French drain)
- trench plugs
- sediment traps
- grade spoil disposal

Slope stabilization and erosion control measures for each crossing have been recommended by Westcoast's geotechnical consultants (HBT AGRA Ltd.) with the understanding that they will be employed as determined on-site. Westcoast will ensure that a geotechnical engineer will be on-site for advice during trenching on the approach slopes to Holman, Grewatsch, Donnie and Coal (two crossing sites) Creeks and to inspect the trench, evaluate slope stabilization and erosion control measures required, and to provide specific direction to construction crews as to the appropriate measures and construction. The geotechnical engineer will provide direction to Westcoast's inspectors (including the environmental inspector) and engineers concerning the work.

Geotextiles (e.g. woven straw matting) are to be used where protection against erosion of exposed soil after construction and prior to establishment of vegetative cover is required

on the portions of the right of way sloping towards the streams and which are downslope from the first diversion ditch or berm.

4. The instream construction window for this area is July 15 to August 31. Westcoast has indicated the possible need for an extension to this window in the event of a delay in receiving NEB approval for the project. As Westcoast will be employing crossing methods that should minimize siltation on the streams identified as having moderate or high fisheries values (eg. Grewatsch, Holman, Donnie and Coal Creeks), DFO will not oppose such an extension. Westcoast will endeavour to construct the crossing of Donnie Creek and the two crossings of Coal Creek during the established construction window (August 1992).

For those streams where construction extends outside the established construction window (i.e. after August 31, 1992), Westcoast Energy Inc. will sample these streams in the areas immediately upstream and downstream to confirm the presence/absence of fish in the immediate area. In the event that sportfish are identified, DFO is to be notified and alternative methods or possible delays in construction will be discussed.

5. An environmental inspector will be present throughout instream construction and bank and slope reclamation activities and is to be empowered to direct work and to stop work where required. The environmental inspector will:
 - a. maintain a log book of construction-related activities, including start/stop times, weather conditions, other observations, details on construction or environmental problems encountered and a record of actions taken to advise/instruct work crews;
 - b. maintain a photographic record of key events during the construction of each stream crossing;
 - c. present the log book and photographs in the form of a construction and rehabilitation report after reclamation of the stream areas; and
 - d. inform DFO immediately of any problems that may affect the fisheries resource including instream works, banks or slopes.
6. Any substantive changes to Westcoast's proposal for instream, bank reclamation or slope stabilization and erosion control works must be outlined to and approved by DFO.
7. Temporary access roads and haul roads shall be constructed so they are stable and do not erode to cause siltation problems at the creeks. Temporary crossings of streams shall be installed so as to minimize impacts on water quality and fish habitat. All temporary crossing installations are subject to a Water Approval (MOELP). This will form part of the Forestry and Access Plan to be available for review in mid-April 1992.
8. All equipment to be used in or near watercourses is to be free of oil, grease, or other contaminants. All machinery cleaning and maintenance is to be done at sites well removed from watercourses to prevent the release of any silt-laden water or contaminants into any ditch or watercourse.
9. Drainage structures such as culverts will be installed with sandbags (not fill) to ensure that water will flow through the structure and to minimize siltation.
10. Drainage structures that require multiple passage of machinery must be constructed to withstand the multiple passage of machinery, and be repaired whenever damaged.

11. The contractor shall have all the necessary equipment, including flumes, sandbags, pumps, pipe and machinery on site prior to starting any stream crossing.
12. Flume types and installations vary according to the design of each water crossing. The pipe must be large enough to handle the maximum anticipated flows of the stream. Heavy steel pipes will be used as flumes. The ends of the flume shall be far enough from the trench to avoid undermining and collapse. Impermeable structures shall be installed around the ends of the flume to funnel the water through the flume and minimize water entering the pipe ditch. The flumes shall remain in place throughout the excavation and backfilling operations. If necessary, the ditch will be dewatered by pumping the water onto vegetated land while the flumes are in place to avoid introducing silt-laden water into the watercourse.
13. The dam and pump method of stream crossings may be used on small watercourses. Instead of allowing the water to flow through a flume, it is pumped between two dam structures (i.e. sandbags), with work carried out between the two dams. Pump intakes will be screened to meet DFO standards. The pump will be capable of maintaining water flow and a spare pump shall be on-site.
14. The Contractor shall install the crossings with a special crossing crew, since all crossings have timing and procedure constraints.
15. Grubbing of the right-of-way on steep slopes, ravines, active floodplains adjacent to stream crossings shall immediately precede construction as follows:
 - a. On each side of the stream, the right-of-way is to be close cut only for a distance which will include either the topographic break at the top of the slope or the high water mark of the active floodplain. No grubbing is to take place in this zone until immediately prior to trenching.
 - b. On each side of the creek, a 10- to 20-metre band of brush cover is to be retained and shall only be removed where required for trenching and may not be removed until immediately prior to trenching. Timber may be removed from this zone, employing directional falling techniques.
16. No vegetation or grade material shall be pushed into a watercourse during the preparation of approach slopes. Nor shall this material be placed in an area which may erode or slide into a stream. Any debris that enters a watercourse must be cleared immediately and in a manner to minimize siltation.
17. When approaching a stream crossing, the pipe trench excavation shall be stopped short of the stream banks, thereby leaving a protective plug of unexcavated material. These plugs shall be left in place until the pipe-laying excavation has begun. The plug length will vary depending on the specific crossing, but generally, a minimum plug width of 1.5 times the top width of the trench and, in no case, less than three metres will be necessary on level ground.
18. Fish will be salvaged from the channel area between the flume or dam barriers prior to dewatering and placed in the stream downstream of the crossing site.
19. All equipment shall be confined to the right of way, temporary work space and work platform whenever possible. Whenever possible, machinery will work from the banks of the streams. On streams where sediment control measures such as fluming are used, machinery shall not work outside the protected area except as required to set or remove

the flumes. The work shall be conducted at all times to minimize instream siltation. Watercourses or dry streambeds are not to be used as an equipment or vehicle access route except where the Access Plan has established culvert or bridge crossing sites.

20. Dewatering is sometimes required to remove impounded surface water or groundwater from a construction area. As a result of exposure to various soils and construction materials, such impounded water may contain large concentrations of suspended sediment or may be contaminated with high nutrient content or toxic substances. The following techniques shall be used for dewatering to prevent such water from affecting the quality of the watercourse.
 - a. Allow suspended sediments to settle before pumping water out of an approved impoundment. Remove settled solids from the settling area after the water has been pumped out.
 - b. For small-scale operations, pump water onto stable, vegetated ground away from the stream to allow filtration of sediment. For major operations or continuous pumping of silt-laden water, construct a settling pond in a location approved by DFO, above the high water mark.
 - c. To reduce surface erosion when pumping, use energy dissipators that will ensure the water outlet does not cause gullyng. Energy dissipators can include materials such as a splash pad or diffusers on the outlet of a discharge hose.
21. The spoil from the stream shall be kept separate from the bank spoil. The large material on the surface of the channel shall also be separated from the underlying channel material whenever possible, for later use in channel habitat restoration. If it is not possible to save native materials, then replacement materials will be on-site prior to initiation of construction.
22. Swamps and wetlands shall not be used as settling ponds, as these may be fish/wildlife habitat.
23. As per the Access Plan, seasonal access roads and vehicle crossings of streams will be removed and rehabilitated during restoration; other crossing structures will be removed, access roads put to bed, right-of-way revegetated, and permanent water bars installed prior to project completion.
24. Final stream channel clean-up shall consist of removing all construction materials and debris from the crossing site, including any material and debris deposited downstream from the site. The stream channel shall be returned to its original configuration (width and depth) and fisheries habitat characteristics (except where enhancement plans have been approved). No instream features such as boulders or streambed material are to be removed, as these may constitute fish habitat.
25. Where valuable fish habitat exists within the pipeline right-of-way, it may be necessary to replace any of that habitat which is destroyed during the pipeline installation. This may include placing large rocks in the stream, the reconstruction of overhanging of abrupt banks, and the re-establishment of overhanging vegetation.
26. If backfilling with the original excavated material would cause excessive siltation, clean granular material shall be used to cover the pipe. The backfill material will be placed in such a way that ponding of the watercourse does not occur, since this could leave isolated pools that could trap fish following cleanup.

27. The Contractor shall apply for a Water Licence (MOELP) if water withdrawals are required for hydrostatic testing, and shall follow DFO's Fish Screening Directive for water intake fish protection facilities for hydrostatic testing and for camp use. Used water from hydrostatic testing shall be discharged onto stable vegetated land or into settling ponds.

